ONTARIO
DEPARTMENT OF MINES

Mineral Resources Circular No. 5

Pyrite Deposits of Ontario

By
D. F. HEWITT

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PYRITE DEPOSITS OF ONTARIO

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Pyrite Deposits of Ontario

By

D. F. Hewitt

Abstract

This mineral inventory briefly describes 129 deposits of pyrite in Ontario, 30 in southern Ontario, and 99 in northern Ontario. The only pyrite and pyrrhotite utilized in Ontario at present is that used at The International Nickel Company of Canada Limited and Falconbridge Nickel Mines Limited for the production of iron ore pellets and sulphuric acid.

Acknowledgments

The author is indebted to Dr. J. C. Davies, Dr. P. E. Giblin, Mr. Clarence Kustra and Mr. J. V. Huddart for information on pyrite properties.

PYRITE DEPOSITS OF ONTARIO

By

D. F. Hewitt[1]

Introduction

At the present time the only mines producing commercial pyrite or pyrrhotite in Ontario are The International Nickel Company of Canada Limited and Falconbridge Nickel Mines Limited from their Sudbury mines. The International Nickel Company and Canadian Industries Limited produce iron and sulphuric acid at Copper Cliff. Falconbridge Nickel Mines produces iron. With the increased demand for pyrite it seems possible that some of the Ontario pyrite mines will be re-activated. The principal mines were those at Madoc and Sulphide in eastern Ontario, at Goudreau Station, the Northland Pyrites mine about 10 miles north of Timagami and the Northpines Pyrites mine about 7 miles west of Sioux Lookout. Some Ontario base metal mines may now find it profitable to recover pyrite and pyrrhotite form their ores. The concentrator at the new Kidd Creek mine of Texas Gulf Sulphur Company has been designed to provide for the addition of a fourth flotation circuit for the production of pyrite.

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[1] Senior Geologist, Ontario Department of Mines, Toronto.
Manuscript received by the Director, Geological Branch, 6 April 1967.

Pure pyrite has 53.45 percent sulphur. Commercial pyrite ore ranges from 25 to 49 percent sulphur. Much of Ontario's sulphur is recovered from smelter gases in the form of sulphur dioxide and manufactured into sulphuric acid. There is a large market for liquid SO_2 in the pulp and paper industry. Sulphur is available in three forms: Elemental sulphur mainly produced by Frasch process; as pyrite or pyrrhotite; sulphur recovered from sour natural gas mainly in Alberta and Saskatchewan. The latter source is dependent upon the volume of sour natural gas being produced and cannot readily be increased.

Consumption of elemental sulphur in Canada in 1963 is given in Table 1.

Table 1 | Consumption of elemental sulphur in Canada, 1963 (from Canadian Mineral Yearbook 1964, Table 3, p. 588)

Chemicals, miscellaneous	129,318
Paper pulp	294,925
Paper and paper products	4,970
Rubber products	3,125
Fertilizers	50,131
Iron and steel	1,375
Pesticides	1,012
Titanium processing	20,380
Uranium processing	18,525
Other industries	2,034
Total	525,795

Available data on consumption of sulphuric acid by industries in 1962 in net tons 100% acid is given in Table 2.

Table 2 — Available data on consumption of sulphuric acid by industries, 1962 (from Canadian Minerals Yearbook 1964, Table 4, p. 588) (net tons of 100% acid)

Iron and steel mills	58,434
Other iron and steel	11,750
Electrical products	5,026
Vegetable oil mills	105
Sugar refineries	243
Leather tanneries	2,025
Textile dyeing and finishing plants	48
Pulp and paper mills	42,904
Processing uranium ore	239,700
Manufacture of mixed fertilizers	237,497
Manufacture of plastics and synthetic resins	22,425
Manufacture of soaps and cleaning compounds	17,514
Other chemical industries	10,680
Manufacture of industrial chemicals	885,238
Petroleum refining	12,847
Mining	46,400
Miscellaneous	65,369
Total	1,658,205

The nominal price per long ton for Spanish pyrite grading 48%S delivered is $9 to $11 per ton.

Part 1

SOUTHERN ONTARIO

Properties are arranged alphabetically by county, township, concession and lot in southern Ontario.

FRONTENAC COUNTY

Clarendon Township

Stalker Occurrence

Location: Lot 42, concession VI, Clarendon township, Frontenac county.

Minerals Present: Pyrite, hematite.

Development: Small test pit on lens of pyrite.

Geology: Fahlband strikes east-west, at the contact of slate and marble.

Dimensions: Pyrite lens has width of 6 feet.

Reference: Wilson (1912, p. 71).

Lot 26, Concession VII

Location: Lot 26, concession VII, Clarendon township, Frontenac county.

Minerals Present: Pyrite, pyrrhotite.

Geology: Rusty schist band with pyrite and pyrrhotite.

Reference: Smith (1956, p. 35 and map 1956-4).

Lot 25, Concession VIII

Location: Lot 25, concession VIII, Clarendon township, Frontenac county.

Minerals Present: Pyrite, pyrrhotite.

Geology: Rusty schist band carrying pyrite and pyrrhotite.

Reference: Smith (1956, p. 35 and map 1956-4).

Lot 26, Concession XIII

Location: Lot 26, concession XIII, Clarendon township, Frontenac county.

Minerals Present: Pyrite, pyrrhotite.

Geology: Rusty schist band carrying pyrite and pyrrhotite.

Reference: Smith (1956, p. 35 and map 1956-4).

Lot 25, Concession XIV

Location: Lot 25, concession XIV, Clarendon township, Frontenac county.

Minerals Present: Pyrite, pyrrhotite.

Geology: Rusty schist band with pyrite and pyrrhotite.

Reference: Smith (1956, p. 35 and map 1956-4).

Hinchinbrooke Township

Lot 22, Concession III

Location: Lot 22, concession III, Hinchinbrooke township, Frontenac county.

Minerals Present: Pyrite.

Geology: Pyrite in shear zone.

Reference: Harding (1947, and map 1947-5).

Kennebec Township

Lot 9, Concession I

Location: Lot 9, concession I, Kennebec township, Frontenac county.

Minerals Present: Pyrite.

Reference: Harding (1942, map No. 51d).

Lot 10, Concession X

Location: Lot 10, concession X, Kennebec township, Frontenac county.

Minerals Present: Pyrite.

Reference: Harding (1942, map No. 51d).

Loughborough Township

Snooks Occurrence

Location: Lot 7, concession XIV, Loughborough township, Frontenac county.

Minerals Present: Pyrite.

Geology: Fahlband strikes northeast in crystalline limestone, massive pyrite shows a width of 7 feet with disseminated pyrite to a width of 25 feet.

Reference: Wilson (1912, p. 70).

Olden Township

Bertrim Occurrence

Location: Lot 15, concession VI, Olden township, Frontenac county.

Minerals Present: Pyrite.

Development: Stripping, trenching and blasting.

Years of Activity: 1936.

Geology: Pyrite disseminated in a zone 50 feet wide and 200 feet long in quartzite. Zone strikes east-west.

Reference: Harding (1947, p. 57).

HASTINGS COUNTY

Cashel Township

Little Salmon Lake Occurrence

Location: Lots 22 and 23, concession VII, Cashel township, Hastings county.

Minerals Present: Pyrite.

Development: Test pit and trench 40 feet long.

Geology: Pyrite body 8 to 10 feet in width and 30 feet long cuts marble.

Grade: Assay results on 4 samples were 18.90, 29.39, 16.59 and 31.62 percent sulphur.

Reference: Thomson (1943, p. 65).

Hungerford Township

Ontario Sulphur Mines Limited

Location: NW$\frac{1}{4}$ and E$\frac{1}{2}$ lot 21, concession XI, Hungerford township, Hastings county.

Minerals Present: Pyrite.

Development: Shaft to 250 feet with levels at 100 to 200 feet; some drifting.

Production: 4821 tons of pyrite ore grading 36.5%S shipped to 1911.

Years of Activity: 1908-1911.

Reference: Wilson (1912, p. 66).

Hungerford Western Extension

Location: Lots 21 and 22, concession XII, Hungerford township, Hastings county.

Minerals Present: Pyrite, calcite.

Development: Surface trenching over a length of 500 feet.

Years of Activity: 1906.

Geology: Pyrite lens exposed for over 500 feet in length with widths varying from 16 to 18 feet of ore grading 42 to 44 percent sulphur. The lens is in schist.

Reference: Fraleck (1907, p. 159).

Hungerford Mine

Location: Lot 23, concession XII, Hungerford township, Hastings county.

Minerals Present: Pyrite, pyrrhotite, calcite, quartz.

Development: 2 shafts opened the deposit to a depth of 575 feet with 3500 feet of drifting on 6 levels.

Years of Activity: 1903-1916.

Geology: The Hungerford fahlband strikes N65°E and is traceable for 2 miles. The ore occurs at the contact of schist and diorite. Three ore lenses were worked with widths of 6 to 22 feet. The north lode was 500 feet long and disclosed 17 feet of massive pyrite grading about 35 percent sulphur.

Operating Companies: American Madoc Mining Company; Nichols Chemical Company.

Reference: Hopkins (1916, p. 196).

Canada Mine

Location: Lot 26, concession XII, Hungerford township, Hastings county.

Minerals Present: Pyrite, pyrrhotite, calcite.

Development: Shaft to 110 feet, lateral work at 85-foot level; the shaft followed the lode on an incline of 50°.

Years of Activity: 1907, Canadian Pyrites Company.

Geology: Gossan zone strikes east-west, dips 50°; width of pyrite lens is 4 to 7 feet. The ore grades upwards of 40 percent sulphur.

Reference: Hopkins (1916, p. 196).

Madoc Township

Bannockburn Mine

Location: Lot 25, concession VI, Madoc township, Hastings county.

Minerals Present: Pyrite, chlorite.

Development: Open pit 80 feet in diameter and 90 feet deep. Shaft sunk 500 feet to south, stoped to depth of 275 feet.

Years of Activity: 1898-1906, American Madoc Mining Company.

Geology: Massive pyrite bodies in chlorite schist with talcose or micaceous alteration. Length of south lens was 160 feet, with widths of 8 to 15 feet. Ore did not diminish with depth but property closed due to mining hazards.

Reference: Wilson (1912, p. 62).

McKenty Occurrence

Location: Lot 6, concession VII, Madoc township, Hastings county.

Minerals Present: Pyrite, hematite.

Development: Open pit 60 feet deep.

Years of Activity: About 1880.

Reference: Wilson (1912, p. 69).

Farrell Occurrence

Location: Lot 9, concession VII, Madoc township, Hastings county.

Minerals Present: Pyrite, calcite.

Development: Test pits sunk over a length of 200 feet show gossan. Shaft sunk to 25 feet.

Geology: Pyrite vein 5 feet wide in calc-schist. Sample averages 40.64 percent sulphur.

Reference: Wilson (1912, p. 69).

Davis Occurrence

Location: S½, lot 10, concession IX, Madoc township, Hastings county.

Minerals Present: Pyrite, calcite.

Development: Test pit 10 feet deep on pyrite disseminated in marble.

Reference: Wilson (1912, p. 69).

Wellington Occurrence

Canadian Sulphur Ore Company

Location: N½, lot 9, concession X, Madoc township, Hastings county.

Minerals Present: Pyrite, pyrrhotite.

Development:

1906: Series of pits and trenches;
1908: Shafts 1 and 2 sunk;
1910: Shaft 1: 75 feet deep; shaft 2: 100 feet deep;
Shaft 3: 120 feet deep with levels at 50 and 120 feet. Drifts 75 feet east and west on second level in pyrite. A large production comes from the open pits. No. 3 pit is 60 by 25 feet by 60 feet deep; No. 4 pit is 25 feet in diameter and 75 feet deep.
1919: No. 3 shaft reached 460 feet with six levels developed.

Geology: Pyrite occurs in massive lenses along the contact between rusty schist to the south and quartzite to the north. Some black slate is present. At open pits 3 and 4 pyrite lenses are 25 feet wide. Two grades of pyrite are present: Siliceous 35%S and dense 46-49%S.

Reference: Miller and Knight (1914, p. 97).

Blakely Mine

Location: Lot 11, concession XI, Madoc township, Hastings county.

Minerals Present: Pyrite, sphalerite, jamesonite, chalcopyrite.

Development: Shaft put down to 135 feet with levels at 50 and 85 feet. A second shaft 150 feet west put down to 30 feet.

Years of Activity: 1905-1908.

Geology: Pyrite occurs in lenses, one of which was 50 feet long and 15 feet wide, in garnetiferous rusty schist near the contact with rhyolite.

Reference: Miller and Knight (1914, p. 100).

LANARK COUNTY

Dalhousie Township

Ladore Occurrence

Location: E½, lot 19, concession VII, Dalhousie township, Lanark county.

Minerals Present: Pyrite, limonite.

Development: Pits 20 and 22 feet deep are 100 yards apart.

Geology: Fahlband occurs at the contact of amphibolite and granite. Pyrite occurs in a band up to 1 foot wide.

Reference: Wilson (1912, p. 70).

Darling Township

McIlwraith Mine

Location: Lot 5, concession IV, Darling township, Lanark county.

Minerals Present: Pyrite, quartz.

Development: Shaft to 75 feet, 150 feet of drifting.

Production: 3 carloads of pyrite ore.

Years of Activity: 1899-1900: Nichols Chemical Company.

Geology: Lens of pyrite 90 feet long and over 12 feet wide strikes slightly north of east and dips 60° south. It occurs on the contact of diorite and marble. An average sample assayed 42.60%S.

Reference: Wilson (1912, p. 61).

LEEDS COUNTY

Elizabethtown Township

Sloan Occurrence

Location: Lot 18, concession II, Elizabethtown township, Leeds county.

Minerals Present: Pyrite, calcite.

Development: Shaft sunk to 20 feet.

Geology: 10-foot band of pyrite ore consists of 3 feet of solid pyrite and 7 feet of interbanded pyrite and calcite. The gossan band which is 6 to 8 feet deep strikes northeast and dips southeast.

Reference: Fraleck (1907, p. 153).

Brockville Chemical Company

Location: Lot 19, concession II, Elizabethtown township, Leeds county.

Minerals Present: Pyrite, calcite.

Development: Pit sunk to 250 feet depth.

Years of Activity: 1868-1879.

Geology: A series of lenses of pyrite are conformable to the lamination of pink granite gneiss and strike northeast, dip southeast.

Reference: Fraleck (1907, p. 152).

Shipman Occurrence

Location: Lot 37, concession II, Elizabethtown township, Leeds county.

Minerals Present: Pyrite, pyrrhotite.

Development: Open pit 40 feet long and 30 feet wide. Adit and raise into open pit. Workings cover an area 150 feet square.

Years of Activity: 1870.

Geology: Orebody consists of narrow veins striking N70°E and dipping 50°N. The country rock is impure quartzite, marble, and gneiss.

Reference: Wilson (1912, p. 61).

LENNOX AND ADDINGTON COUNTY

Sheffield Township

Foley Occurrence

Location: Lot 8, concession XIV, Sheffield township, Lennox and Addington county.

Minerals Present: Pyrite, pyrrhotite, molybdenite, pyroxene, calcite, mica.

Development: Pit 80 feet by 40 feet by 15 feet deep.

Geology: Disseminated sulphides in marble.

Reference: Wilson (1912, p. 71).

PETERBOROUGH COUNTY

Galway Township

Hughes Occurrence

Location: Lot 10, concession XVIII, Galway township, Peterborough county.

Minerals Present: Pyrite, pyrrhotite.

Development: Pits and trenches.

Years of Activity: 1929.

Geology: Mineralized zone 110 feet long and 10 feet wide in marble.

Reference: Satterly (1943, p. 82).

RENFREW COUNTY

Blithfield Township

Caldwell Mine

Location: Lots 1 and 2, concession I, Blithfield township, Renfrew county.

Minerals Present: Pyrite, quartz, calcite.

Development: 2 inclined shafts; No. 1 to 75 feet on 60° incline; No. 2 to 269 feet on 56° incline; considerable crosscutting and drifting on two levels.

Production: 1918-1930: 5810 tons pyrite.

Years of Activity: 1915-1930.

Geology: Pyrite ore zones extend for 800 feet, up to 20 feet wide in hornblende schist.

Reference: Satterly (1944, p. 93).

Part II

NORTHERN ONTARIO

Properties are arranged alphabetically by district, and by property name in northern Ontario. The Goudreau deposits are described as a group at the end of the District of Algoma descriptions.

DISTRICT OF ALGOMA

Algoma Ore Properties

Location: Township 48, on west boundary of township, 1½ miles north of south boundary, District of Algoma.

Minerals Present: Pyrite, magnetite.

Development: Drilling in 1953 by Algoma Ore Properties.

Geology: Pyrite-magnetite zone lies between felsic and mafic metavolcanics. Over a width of 61 feet, sulphur content averages 9.7%.

Reference: Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, File S.S.M.-344, Algoma Ore Properties.

Anjigami Lake

Location: Township 29, range XXII, District of Algoma.

Minerals Present: Pyrite, pyrrhotite.

Development: Claims staked about 1922 by A. McCreight. Optioned to Noranda Mines Limited around 1946. Some trenching, and nine drill holes. Property briefly examined in 1952 by Candela Development Company.

Geology: A 75 to 100-foot wide silica-rich band of iron formation lies between felsic volcanic rocks. Both sandy and compact pyrite mineralization, nearly 100% pyrite, were disclosed by trenching.

References: Ontario Dept. Mines, Redident Geologist, Sault Ste. Marie, File S.S.M.-245, Candela Development Company.

Bearpaw Lake

Location: Township 49, District of Algoma.

Minerals Present: Pyrite, pyrrhotite.

Development: Trenching and drilling.

Geology: A 12-foot wide band of pyrite is intercalated with felsic metavolcanics.

References: Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, File S.S.M.-777, Algoma Central Railway.

Big Lake

Location: Township 28, range XXV; north-central part, District of Algoma.

Minerals Present: Pyrite, pyrrhotite, siderite.

Development: Drilling in 1953.

Geology: Pyritic zones in iron formation intercalated with felsic and mafic metavolcanics. Pyritic zones are up to 64 feet in width. Available analytical data, from one drill hole, give 31.4%S over width of 52.0 feet.

Reference: Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, File S.S.M.-978, Big Lake Michipicoten.

Candela Development Company

Location: Township 28, range XXVI: east-central part, District of Algoma.

Minerals Present: Pyrite.

Development: Trenching. Geological mapping by Candela Development Company in 1954.

Geology: Pyritic iron formation, up to 70 feet wide and 2200 feet in length. Pyrite lenses up to 6 feet in width occur in the iron formation.

Reference: Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, File S.S.M.-1035, Candela Development Company.

Helen Iron Mine

Location: 15 miles northeast of Michipicoten Harbour; Township 29, range 24, District of Algoma.

Minerals Present: Pyrite, hematite, siderite.

Development: Worked by open pit and 2 shafts to a depth of 650 feet.

Years of Activity: 1900-1919.

Production: 51,930 tons of pyrite.

Geology: Pyrite lenses occur in the hematite orebody. It is bounded on the east by iron carbonate, on the north by cherty carbonate and quartz porphyry schists, on the south by quartz porphyry schist and on the west by pyritous and cherty iron carbonates.

Reference: Wilson (1912, p. 72).
Moore and Armstrong (1946, p. 87-118).

Palmgren claims

Location: Township 28, range XXII, District of Algoma.

Minerals Present: Pyrite, pyrrhotite.

Development: Trenching. Airborne electromagnetic and magnetic surveys in area in 1962-63 by Algoma Central Railway.

Geology: Pyritic zones in iron formation.

References: Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, Files S.S.M.-798 and 854, Algoma Central Railway.

Samreid Lake Deposit

Location: Township 157, 13 miles northwest of Elliot Lake, District of Algoma.

Minerals Present: Pyrite, pyrrhotite, magnetite, chalcopyrite, cubanite, marcasite.

Development: 34 Drill holes, having a total length of 8,281 feet, by Talvey Metal Mines Limited, in 1954 and 1957.

Geology: Sulphide-magnetite mineralization occurs in interbedded Archean cherts and mafic metavolcanics. Chert is the most common host rock. The rocks strike easterly, and dip 80°S to vertical.

Mineralization ranges from disseminated to massive. The mineralized zone has been traced for a strike length of 3300 feet; magnetometer data indicates a total length of 4200 feet. Width ranges from 55 to 100 feet in thickest part of the zone, decreases to 4 feet at east end. Where mineralized zone is thickest, sulphur assays averaging about 42% have been obtained over a width of 35 feet. Assay data show that base and precious metals are present in negligible amounts.

References: Friedman (1959).
Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, File S.S.M.-420, Talvey Metal Mines Limited.

Smith - Travers - Laforest Occurrence

Location: Township 45, range XXV, District of Algoma; Missinaibi area.

Minerals Present: Limonite, pyrite.

Development: Pits and trenches.

Geology: Heavy limonite gossan on pyritous iron formation between felsic and mafic Keewatin schists.

Reference: Janes (1952, p. 57).

Goudreau Pyrite Deposits*

The main pyrite deposits are associated with an iron formation that extends eastward from Goudreau Station (mile 177, Algoma Central Railway) for 7 miles to the east boundary of township 49. These deposits are the Morrison #1, #3 and #4 deposits, the Bear deposit, the McPhail deposit and deposits A,B,C,D,E and F. All are owned by The Algoma Steel Corporation Limited.

The following is a general section downward across the pyrite:

Keewatin Formation - (Dark coloured ellipsoidal mafic volcanics
- Iron Formation
- (Light coloured felsic volcanics

The iron formation is subdivided as follows:

Iron Formation - (Banded Silica member
- Pyrite member
- (Carbonate member

Pyrite Member:

The sulphides usually have a well developed granular texture but locally the rock is massive and fine-grained. Grain size ranges from 0.01 to 0.8mm. in diameter.

The rock often appears to be composed entirely of pyrite but this is seldom the case. The sulphur content is generally less than 40 percent - equivalent to about 75 percent pyrite.

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* Information supplied by J. V. Huddart, geologist, Exploration Department, Algoma Ore Division, Algoma Steel Corporation, Sault Ste. Marie, Ontario.

Pyrrhotite is a normal constituent but seldom exceeds 10 percent of the total sulphides. Chert and iron carbonate occur in disseminated form in the more massive sulphide deposits and as lenses and beds in the leaner material.

Structure:

The iron formation lies in open folds and forms a series of "S" shaped traces at the surface. It is broken and offset by faults.

The usual normal thickness of the pyrite member is probably between 50 and 60 feet. Greater concentrations occur where secondary drag folding is present and at the noses of anticlines and synclines.

Production:

In the 1914-1918 period Nichols Chemical Company mined and shipped 300,000 to 400,000 tons of pyrite ore grading about 30%S. Practically all production was from the "C" deposit. In the same period Rand Consolidated Mines Limited mined a few thousand tons with an average grade of about 38%S from the Morrison #4 deposit. This deposit contained a pocket of secondary pyrite sand (grade plus 45%S).

From 1959 to 1962 Algoma Ore Properties Division of The Algoma Steel Corporation Limited mined and shipped to Wawa about 850,000 tons of ore. This production was obtained by

open pit operations at the Morrison #4, the Bear, the "C" and the "A" deposits. The approximate average grade was iron 40% and sulphur 25 to 30%.

Reserves:

The structure of the iron formation has revealed deposits in synclines or at the crests of folds that have impressive surface dimensions and limited vertical extent. Concentrations will occur on the main limbs of the folds where crinkling or drag folding is present but the average thickness of the pyrite member is 50 to 60 feet. A major sustained operation would require underground mining.

Other Deposits:

(1) The Morrison #2 is $1\frac{1}{2}$ miles south of Goudreau and $\frac{1}{2}$ mile west of the Algoma Central Railway (and the McVeigh Creek fault). The deposit may be at the same stratigraphic horizon as the main formation east of the tracks. The deposit is owned by Irsugo Consolidated Mines Limited.

(2) The Holdsworth Pyrite Deposit is not associated with iron formation and has the features of a secondary deposit. It is owned by Dupont of Canada.

(3) The Wilcox or Webb Deposit is part of one of the many smaller iron formations within the mafic volcanic rocks.

(4) The Hamilton Pyrite Deposit is not at the same stratigraphic horizon as the main Goudreau range.

The main Goudreau deposits are described along the iron ranges from west to east from Goudreau village.

Rand Consolidated Mines Limited

Morrison #4 Deposit

Location: Township 27, range XXVI; west end of Goudreau range, claims AC, 44, 45, 46, 50, District of Algoma.

Minerals Present: Pyrite, siderite.

Development: Staked by J.W. Morrison about 1916; transferred to Algoma Exploration in 1917; purchased by Rand Consolidated Mines; acquired by Irsugo Consolidated Mines in 1927; purchased by Algoma Ore Properties in 1953. Mined by open pit in 1918-1919. 67,000 tons of pyrite mined by Algoma Ore Properties in 1958 and 1959.

Geology: A sheet of pyrite 40 feet thick lies between banded silica on the north and ottrelite porphyry on the south. The contact with the latter is transitional. Depth probably good; band is 3000 feet long and 40 feet wide, grading 40.5%Fe, 7.4%SiO_2, 26.9%S.

Reference: Collins, Quirke and Thomson (1926, p. 107); J.V. Huddart (personal communication).

Goudreau Pyrite Deposit B

Location: Township 27, range XXVI, District of Algoma;

Minerals Present: Pyrite, pyrrhotite, siderite.

Development: Pits and trenching.

Years of Activity: 1918-1919.

Geology: Pyrite-bearing zone has a length of 900 feet in an east-west direction. Pyrite is interbanded with green schist.

Reference: Janes (1952, p. 59).

Goudreau Pyrite Deposit D

Location: Township 27, range XXVI, District of Algoma.

Minerals Present: Pyrite, pyrrhotite, garnet.

Development: Test pits, diamond drilling. Outcrops on two limbs: South limb, 16 holes, 1914, 150,000 tons at 28.4%S, 41.3%Fe, average width 95 feet. North limb, 3 holes, 1914, tonnage about 150,000 tons, grading 24.15%S, 36.38%Fe.

Geology: A small low grade pyrite deposit related to secondary folding.

Reference: J.V. Huddart (personal communication).

Goudreau Pyrite Deposit E

Location: Township 27, range XXVI, District of Algoma.

Minerals Present: Pyrite, pyrrhotite.

Development: 9 holes drilled in 1914; old shaft or pit.

Geology: A shallow shell of a deposit with minor tonnage. Interbanded pyrite, green schist, carbonate and silica are exposed over a width of 250 feet.

Reference: J.V. Huddart (personal communication).

Goudreau Pyrite Deposit F

Location: Township 27, range XXVI, District of Algoma.

Minerals Present: Pyrite, pyrrhotite.

Development: 1 hole drilled in 1951 by Algoma Ore Properties.

Geology: Deposit located on the main limb and has good depth but is lensy and narrow.

Reference: J.V. Huddart (personal communication).

Goudreau Pyrite Deposit C

Location: Township 27, range XXVI, District of Algoma; claims JL 15 and 9.

Minerals Present: Pyrite, pyrrhotite, siderite.

Development: 1914-1919: Open pit production of 250,000 tons by Nichols Chemical Company. Pit measured 1100 feet by 700 feet and is 60 feet deep at the west end. 1961: About 75,000 tons of ore remaining was mined by Algoma Ore Properties.

Geology: A secondary anticlinal structure on the main fold. A pyrite lens 200 to 300 feet wide, 50 feet thick and over 600 feet long is bounded by andesite and diorite on the north, and rhyolite and pyroclastics on the south. The lens strikes east-west and dips southwest at 18 to 40°. The ore averages 28.33%S.

Reference: Collins, Quirke and Thomson (1926, p. 108); J.V. Huddart (personal communication).

C Extension

Location: Township 27, range XXVI, south of C orebody, District of Algoma.

Minerals Present: Pyrite, pyrrhotite, siderite.

Development: Mined by Algoma Ore Properties in 1962-1963. About 200,000 tons at 38.9%Fe, 23.6%S are blocked out.

Geology: A shallow saucer-shaped secondary structure.

Reference: J.V. Huddart (personal communication).

Goudreau Pyrite Deposit, Bear Claim

Location: Township 27, range XXVI, District of Algoma; claim JL 28.

Minerals Present: Pyrite, pyrrhotite.

Development: Test pits and stipping by Nichols Chemical Company in 1918-1919. Drilled in 1958 by Algoma Ore Properties. Open pit production of about 350,000 tons by Algoma Ore Properties in 1959-1961.

Geology: A shallow syncline; the pyrite-bearing zone has an east-west length of 1500 feet, a width of 100 feet and a depth of 120 feet. The walls of the deposit are green schist. The remaining reserves are negligible.

Reference: Collins, Quirke and Thomson (1926, p. 109); J.V. Huddart (personal communication).

McPhail Pyrite Deposit

Location: Township 27, range XXVI, District of Algoma. West of "A" deposit on north range.

Minerals Present: Pyrite, pyrrhotite.

Geology: Consists of 3 main sections:

(a) West section: Pyrite forms a regular zone 500 to 600 feet long and about 40 feet wide, grading 40%Fe, 6%SiO_2 and 38%S.

(b) Centre section: A pyrite member and a considerable thickness of crystalline limestone. The relationship between the two units is irregular.

(c) East section: The west part of the section is on high ground and cut up by dikes; the east part is low and swampy.

Reference: J.V. Huddart (personal communication).

Goudreau Pyrite Deposit A

Location: Township 27, range XXVI, District of Algoma: Claims JL 16 and 21.

Minerals Present: Pyrite, pyrrhotite, siderite.

Development: Trenching and diamond drilling by Nichols Chemical Company in 1914, 1918-1919. Drilled by Algoma Ore Properties in 1960. 250,000 tons mined by Algoma Ore Properties from an open pit in 1960-1961.

Geology: The A orebody is part of the main north range extending from the McPhail to the Morrison #3. The swelling at "A" was due to drag folding on this limb. The main body of pyrite is 1800 feet long and 20 to 100 feet thick; it dips northward at 30 to 45° and is overlain by green schists and underlain by schistose porphyry.

Reference: Collins, Quirke and Thomson (1926, p. 109); J.V. Huddart (personal communication).

Morrison #3 Deposit

Location: Township 27, range XXVI, District of Algoma; claims AC 38, 39, 40.

Minerals Present: Pyrite.

Development: Trenched and drilled in 1918; in 1919 a 47° inclined shaft was sunk to 230 feet with levels at 100 and 210 feet by Nichols Chemical Company. Limited lateral work. Drilled by Algoma Ore Properties in 1963 indicating an open pit potential of 130,000 tons grading 40%Fe, 6%SiO_2 and 31.7%S.

Geology: Pyrite occurs in a secondary fold on the main north limb of the range. Lens of pyrite 1250 feet long and up to 115 feet wide. Orebody dips 40 to 70°N and lies on the south side of a band of iron formation.

Reference: J.V. Huddart (personal communication).

Morrison No. 1 Deposit

Location: Township 49, District of Algoma; claims SSM 1708-11, 1769-72, 1775-78.

Minerals Present: Pyrite, magnetite, siderite.

Development: 8 holes drilled in 1914. Drilled in 1953. Ore reserves estimated at 300,000 tons running 38-42%S.

Geology: A shallow synclinal structure; lens of pyrite 400 feet long, 12 to 110 feet thick.

Reference: Collins, Quirke and Thomson (1926, p. 110).

Hamilton Pyrite Claims

Location: Not part of Goudreau range; located near Smith Lake, 5 miles east of mileage 171 on the Algoma Central railway, District of Algoma.

Minerals Present: Pyrite.

Development: Test pitting.

Years of Activity: 1913-1914.

Geology: Massive pyrite lens 15 feet wide.

Reference: Janes (1952, p. 61).

Holdsworth Pyrite Deposit

Location: Township 28, range XXV, claim SSM 1054; Township 28, range 24, claim SSM 1055, District of Algoma.

Minerals Present: Pyrite.

Development: Algoma Steel Corporation drilled 22 holes in 1918-1919. Purchased by Grasselli Chemical Co. in 1926 and by Canadian Pyrites Limited in 1929. Sold to Dupont of Canada in 1959.

Geology: Not associated with iron formation. Two lenses of pyrite 200 feet apart dip north at 65 to 70°, and lie between volcanic green schist on the north and light grey sericite schist on the south. The east lens is 1100 feet long and 18 to 25 feet wide. The west lens is 600 feet long and up to 31 feet wide. Two lenses estimated to contain 900,000 tons of pyrite averaging 46.31 percent sulphur.

Reference: Collins, Quirke and Thomson (1926, p. 123).

Irsugo Consolidated Mines Limited

Morrison #2 Deposit

Location: Township 28, range 26, 1½ miles south of Goudreau Station, District of Algoma.

Minerals Present: Pyrite, siderite.

Development: Staked by J.W. Morrison, trenching and drilling 1915-1916; 1920. Sold to Rand Consolidated Mines Limited, who started an adit which was abandoned after driving 200 feet. Acquired in 1927 by Irsugo Consolidated Mines Limited. Nineteen drill

holes, having a total length of 4,470 feet, were completed prior to 1941. Optioned in 1941 by Aldermac Copper Corporation Limited, who deepened 1 hole, drilled 10 new holes, total footage drilled 4,218 feet.

Geology: 3 principal zones, known as Tunnel section, North Band; Central section, South Band; and Western section, South Band. The zones have an average width of about 30 feet, and the following lengths.

Tunnel section, North Band: 1,300 feet;
Central section, South Band: 2,600 feet;
Western section, South Band: 1,400 feet;

The zones strike easterly, and dip steeply north to vertical.

Elevations rise to a maximum of 350 feet above the nearby Algoma Central Railway tracks. Above track elevation, the deposits contain approximately 5,500,000 tons having an average grade of 50 percent pyrite.

References: Collins, Quirke and Thomson (1926, p. 103); Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, file S.S.M.-989, Irsugo Consolidated Mines Limited.

Reau Lake

Location: Township 28, range XXV, District of Algoma.

Minerals Present: Pyrite, siderite.

Development: Drilling by Jalore Mining Company in 1953. Geological mapping, self-potential survey, and drilling in 1954 by Candela Development Company.

Geology: Pyrite-siderite zones intercalated with felsic and mafic metavolcanics. A 100-foot wide zone of high grade pyrite occurs on the small island in Reau Lake; length of the zone is unknown. A second zone, of high grade pyrite, lying beneath the northeast corner of the lake, is at least 300 feet long and has a width of approximately 30 feet.

Reference: Ontario Dept. Mines, Resident Geologist, Sault Ste. Marie, File S.S.M.-1035, Candela Development Company.

Wilcox or Webb Claim

Location: Township 48, District of Algoma.

Minerals Present: Pyrite, limonite.

Development: Pits and trenches.

Geology: Trenches expose a thick gossan of limonite and pyrite for widths of 20 to 30 feet.

Reference: Collins, Quirke and Thomson (1926, p. 111).

DISTRICT OF COCHRANE

Big River Occurrence

Location: Tributary of the Opasatika River, District of Cochrane.

Minerals Present: Pyrite.

Geology: 35-foot vein of pyrite exposed in the river.

Reference: Janes (1952, p. 68).

Bobs Lake Occurrence

Location: Lot 7, concessions III and IV, Whitney township, District of Cochrane.

Minerals Present: Pyrite, quartz, pyrrhotite.

Development: 3 diamond drill holes.

Years of Activity: 1916-1917.

Geology: Pyrite in siliceous iron formation traceable for one quarter mile. Band dips 40-50°NW. Pyrite in in part massive, in part disseminated. 14 feet of pyrite and quartz exposed in one place.

Reference: Janes (1952, p. 74).

Island Portage Occurrence

Location: Island portage on the Mattagami River between its junction with the Kakozhish and Kapuskasing rivers; District of Cochrane.

Minerals Present: Pyrite, quartz, garnet.

Geology: 30-foot vein of pyrite and quartz with garnet.

Reference: Janes (1952, p. 67).

Kidd Creek Mine

Texas Gulf Sulphur Company

Location: Lots 3 and 4, concession V, Kidd township, District of Cochrane.

Minerals Present: Chalcopyrite, sphalerite, pyrite, pyrrhotite, galena.

Development: Open pits; plant of 9000 tons per day capacity. The concentrator has been designed to provide for the addition at a later date of a fourth flotation circuit for the production of pyrite.

Years of Activity: 1964 -

Ore Reserves: Diamond drilling to April 1965 indicated an estimated 62,500,000 tons including previous estimate of 55,000,000 tons grading 4.85 oz. silver per ton, 1.33% copper and 7.08% zinc. (Canadian Mines Handbook, 1966-67, p. 311).

Geology: Massive sulphide body in rhyolitic rocks.

Moyer Veteran Claim

Location: S½, lot 9, concession III, Whitney township, District of Cochrane.

Minerals Present: Pyrite.

Geology: Pyritous schist band strikes northeast and dips nearly vertically. An 18-foot width is exposed. An average sample assayed 26.10 percent sulphur.

Reference: Janes (1952, p. 75).

Dan O'Connor Claim

Location: S½, lot 7, concession V, McCart township, District of Cochrane.

Minerals Present: Pyrite.

Development: Pits and trenches.

Years of Activity: 1916.

Geology: Pyrite nodules in cherty black schist.

Reference: Janes (1952, p. 76).

DISTRICT OF KENORA

Fanning Occurrence

Location: N. shore of Vermilion Lake, Vermilion township, District of Kenora; 50°04'N, 92°13'W.

Minerals Present: Pyrite.

Development: Drilling.

Geology: Pyrite veins 2 to 6 feet wide in mafic volcanics; drilling intersected pyrite 20 feet wide. The veins strike east-west and dip north.

Reference: Hurst (1932, p. 28).

Goldenrod Mining Company

Location: HW 652, HW 654, Pickerel township, District of Kenora. West side of Pickerel Arm, Minnitaki Lake 49°54'N, 92°16'W.

Minerals Present: Pyrrhotite, pyrite, magnetite.

Development: Shaft sunk to 75 feet.

Years of Activity: 1899.

Geology: Sulphide iron formation in sediments.

Reference: Hurst (1932, p. 28).

Guthrie Claims

Location: East and south of Octopus Lake; claims A274, 257, 273; S772-5; 49°50'N, 93°46'W; District of Kenora.

Minerals Present: Pyrite, pyrrhotite, limonite.

Development: Test pitting.

Geology: Fahlband strikes northeast cutting felsite schist.

Reference: Janes (1952, p. 52).

Island P 549

Location: Island P549, Rush Bay, S.W. corner of Boys township, District of Kenora. Lat. 49°40'N, Long. 94°53'W.

Minerals Present: Pyrite.

Geology: Pyrite vein 10 feet wide striking east-west and dipping 75°-80° north in sheared agglomerate.

Reference: Davies (1965, p. 45).

J. A. Mathieu Property

Location: Keewatin - Hematite lakes, District of Kenora; 49°04'N, 91°08'W.

Minerals Present: Pyrite, pyrrhotite, siderite, quartz.

Development: Diamond drilling 23 holes in 1953.

Years of Activity: 1914, 1948, 1950, 1953.

Geology: Replacement of brecciated quartzite adjacent to contact with slates. A zone is south of Central Hematite Lake, strikes east-west and dips 85° south. It has a length of 3000 feet and a width of 32 to 40 feet. B zone, east section, close to the north shore at the west end of Hematite Lake, strikes east-west, dips 85° south, has a length of 3000 feet and a width of about 70 feet. B zone, west section, is near the east shore of Hematite Lake. It has a length of 700 to 1000 feet and a width of 150 to 300 feet.

Reference: Ontario Dept. Mines, Resident Geologist, Kenora, files.

S. Matuso

Location: 2 miles northwest of Vermilion Lake, District of Kenora: 50°04'20"N, 92°19'W.

Minerals Present: Pits and trenches.

Years of Activity: 1964-1965.

Geology: Sulphide iron formation in mafic volcanics.

Reference: F.J. Johnston, Ontario Dept. Mines, Preliminary Map P. 336, 1966.

McNairnay Claims

Location: 1 mile south of Ryerson Lake, District of Kenora; 50°22'N, 95°08'W.

Minerals Present: Pyrite, chalcopyrite.

Geology: Sulphide zones in volcanics and quartzitic sediments traceable over widths of 100 feet and up to $\frac{1}{4}$ mile in length.

Reference: Derry (1930, p. 39).

Minaki Pyrite Mine

Location: Six miles NNE of Minaki, District of Kenora; 50°04'N, 94°36'W.

Minerals Present: Pyrite, quartz.

Development: 22 pits, 26 diamond drill holes. Ore reserves reported as 1,432,400 tons to 250-foot depth, averaging 41%S.

Years of Activity: 1937.

Geology: Pyrite-bearing zone has length of 1000 feet, width of 75 feet, strikes east-west and dips 83°N.

Reference: Ontario Dept. Mines, Resident Geologist, Kenora, files.

Net Island, Eagle Lake

Location: Net Island, Eagle Lake, 16 miles from Vermilion Bay; 49°41'N, 93°17'W; District of Kenora.

Minerals Present: Pyrite, chalcopyrite, limonite, hematite, magnetite.

Development: Stripping, test pitting, shaft 22 feet deep.

Years of Activity: 1910-1911.

Geology: Pyrite vein 4 to 12 feet wide in chlorite schist.

Reference: Janes (1952, p. 53).

Nicuso Syndicate

Location: 14 miles southwest of English River station on C.P.R., Pine and Cryderman Lakes; 49°04'N. 91°13'W; District of Kenora.

Minerals Present: Pyrite.

Development: Pits.

Years of Activity: 1917-1918.

Geology: Black graphitic slate heavily mineralized with pyrite. 12 feet of mixed pyrite and slate. Sulphur content ranges from 24 to 30 percent.

Reference: Janes (1952, p. 54).

North Pines Mine

Location: Lot 32, concession I, Drayton township, District of Kenora; 50°05'N, 92°05'W.

Minerals Present: Pyrite, pyrrhotite, quartz.

Development: No.1 shaft 337 feet deep; No.2 shaft on 59° incline to 320 feet, continued to 624 feet at 55°. Six levels developed.

Years of Activity: Opened in 1905 as Shilton Sulphur mine, later called Michie mine, Vermilion Pyrite mine and Northern Pyrites mine. In 1919 Nichols Chemical Company took over and named it North Pines Mine. 1905-1921.

Production: About 500,000 tons of pyrite.

Geology: Pyritic schist band 1000 feet long and 45 feet wide, strikes N50°E and dips 55°NW. Pyrite in shear zone. Footwall is diabase or coarse-grained greenstone. Hangingwall is schist.

Reference: Hurst (1932, p. 28).

Rochon Claims

Location: Claims D704 and D707; 2½ miles south of Keewatin, within ½ mile of the west shore of Rat Portage Bay, Lake of the Woods. 49°43'40"N, 94°35'W; District of Kenora.

Minerals Present: Pyrite, pyrrhotite, limonite.

Development: Test pits and trenches.

Geology: Gossan bands in porphyritic schist and agglomerate strike a little north of east.

Reference: Janes (1952, p. 52).

Schmidt Claims

Location: Vermilion Lake, 4 miles northeast of North Pines Mine, District of Kenora; 50°07'N, 92°00'W.

Minerals Present: Pyrite, pyrrhotite.

Development: Pits, trenches, diamond drilling.

Geology: Pyrite occurs along the contact between greenstone and altered quartz porphyry.

Reference: Hurst (1932, p. 31).

Shoal Lake

Location: Shoal Lake near mouth of Carl Bay; 49°32'N, 94°52'W; District of Kenora.

Minerals Present: Pyrrhotite.

Geology: 12-foot vein of pyrrhotite in altered trap; also a 4-foot wide vein of pyrrhotite at the contact of granite and altered trap.

Reference: Janes (1952, p. 52).

Tindall Occurrence

Location: East end of Whitefish Island, Vermilion Lake, 8 miles west of North Pines mine, Vermilion township, District of Kenora; 50°02'N, 92°15'W.

Minerals Present: Pyrite.

Development: Test pits.

Geology: 3 to 4-foot vein of pyrite strikes N80°E, cuts schistose quartz porphyry.

Reference: Hurst (1932, p. 31).

West Hawk Lake

Location: West Hawk Lake, south of Ingolf, District of Kenora; 49°46'N, 95°08'W.

Minerals Present: Pyrrhotite.

Geology: Pyrrhotite veins strike east-west in schistose rock. The main pyrrhotite body is 150 feet wide.

Reference: Janes (1952, p. 52).

Whalen Mine

Location: East side of Minnitaki Lake, District of Kenora; 49°59'30"N, 91°47'40"W.

Minerals Present: Pyrite, quartz.

Development: Shaft 75 feet deep, crosscut 100 feet long, drilling.

Years of Activity: 1917.

Geology: Massive pyrite lens 20 to 35 feet wide in grey schist.

Reference: Hurst (1932, p. 32-35).

Woodney Claims

Location: Lot 1, concession IV, Echo township, District of Kenora; 49°56'N, 92°17'W.

Minerals Present: Pyrite.

Development: Trenching and stripping.

Years of Activity: 1917, 1946.

Geology: Two 3 to 4-foot lenses of pyrite up to 100 feet long in mafic volcanics.

Reference: Armstrong (1950, p. 38).

DISTRICT OF NIPISSING

Mandy Claim

Location: Cassels township, District of Nipissing, claim TR1229. A short distance inland from the east shore of Outlet bay of Net Lake.

Minerals Present: Pyrite, quartz.

Development: Shallow pits and trenches.

Geology: An irregular deposit of pyrite and quartz in greenstone country rock. An assay gave 44.58%S.

Reference: Janes (1952, p. 71).

Northland Pyrites Mine

(Rib Lake mine, James Lake mine, Harris mine)

Location: Best township, District of Nipissing, on the shore of James Lake, ¾ mile west of mile 83 on the Ontario Northland railway. Ten miles north of Timagami station.

Minerals Present: Pyrite, pyrrhotite, quartz.

Development: 1906-1910: Main shaft to 300 feet, levels at 100, 175 and 275 feet; shaft dips 70°W. Open cut workings north of the shaft. Stopes 10 to 20 feet wide.

Geology: Fahlband traceable for ¼ mile. A lens shaped pyrite orebody in soft green schist about 100 feet east of hornblende granite contact. Dip is west at 70°.

Reference: Wilson (1912, p. 71).

O'Connor Occurrence

Location: Strathcona township, District of Nipissing, claim WD357. 2½ miles from Timagami station on south shore of NE arm of lake.

Minerals Present: Pyrite, chalcopyrite, pyrrhotite.

Development: Pits and open cuts; 8 diamond drill holes totalling 1000 feet in 1916-1917.

Production: 1000 tons of ore, 1916.

Geology: Pyritous band consists of 5 to 30 feet of pyrite flanked by pyritized rock. It parallels iron formation in country rock of greenstone and green schists. Assays show 20.12 to 39.4%S, 0.78 to 5.4%Cu.

Reference: Janes (1952, p. 69).

Phillips Bay Pyrite

Copperfields Mining Corporation Limited

Location: Lake Timagami, near Timagami Island; District of Nipissing.

Minerals Present: Pyrite (70-80%), chalcopyrite, millerite, gersdorffite, hematite, magnetite.

Development: Diamond drilling.

Geology: Massive pyrite deposit lying between an altered diorite sill and volcanics.

Dimensions and Grade: Irregular sheet 1000 feet by 18 feet by 700 feet. Ore reserves 850,000 tons, 70-80% pyrite, 0.78% copper, 0.50% nickel.

Reference: Thomson (1960, p. 79).

DISTRICT OF RAINY RIVER

Atikokan Iron Mine

Location: E10, 11 and 12, Hutchinson township, District of Rainy River. East of Sapawe Lake; 48.78 degrees North, 91.28 degrees West.

Minerals Present: Magnetite, pyrite, pyrrhotite, chalcopyrite, silica, carbonates.

Development: 1908-1913: 5 tunnels driven through the ridge and 3 shafts started.

Geology: The ore body consists of lenses of magnetite with some pyrite and pyrrhotite. Lenses strike east-west and dip steeply north. Lenses 7 to 35 feet wide assay 14.93 to 25.75%S and 45.10 to 57.33%Fe. Some low sulphur ore, some high sulphur ore.

Reference: Janes (1952, p. 47).

Brunette's Claims

Location: Nickel Lake iron range, west side of entrance to Rocky Islet Bay; Watten township, District of Rainy River; 48.66000 degrees North, 93.13000 degrees West.

Minerals Present: Pyrite, pyrrhotite, limonite, silica.

Development: 1918: Trenching, test pitting, drilling over $\frac{1}{4}$ mile or more by Grasselli Chemical Company. Shaft sunk.

Geology: Pyrite lenses in banded iron formation striking N20E. Width 20 feet, dips steeply north.

Reference: Janes (1952, p. 44).

East Brudon Group

Location: Watten township, District of Rainy River; 48.66000 degrees North, 93.15000 degrees West.

Minerals Present: Pyrite, pyrrhotite.

Development: 3 trenches by Brudon Enterprises in 1950.

Geology: 20 to 35-foot wide bands of sediments carrying 20 to 25% disseminated sulphides. Strike NW, dip SW. Length up to 500 feet.

Furlonge Lake Deposits

Location: 35 miles north of Fort Frances and 10 miles north of Manitou Sound the north end of the north arm of Rainy Lake, District of Rainy River, 49°05'40"N 93°24'W. Claims JL150, 151, FF240,255.

Minerals Present: Pyrite, pyrrhotite.

Development: Suface exploration, Drummond Mines Ltd.

Geology: Four lenses of pyrite with the following surface dimensions have been found: No. 1 lens, 118 feet by 30 feet; No. 2 lens, 110 feet by 24 feet running 41.62%S; No. 4 lens, 50 feet by 13 feet running 40.68%S and No. 6 lens, 60 feet by 14 feet running 37.63%S.

Reference: Janes (1952, p. 44).

MacKenzie and Mann Locations

Location: AL460, 461, 462; Freeborn township, District of Rainy River; west side of Steep Rock Lake; 48.76000 degrees North, 91.66000 degrees West.

Minerals Present: Pyrite.

Development: 1903-04: Five diamond drill holes over a length of 600 feet.

Geology: Core intersections of good grade pyrite 6 to 21 feet thick were obtained. The band strikes N60°E.

Reference: Janes (1952, p. 43).

Nickel Lake Iron Range

Location: Townships of Watten and Halkirk, District of Rainy River; 48.66000 degrees North, 93.13000 degrees West.

Minerals Present: Pyrite, magnetite, pyrrhotite.

Geology: Massive pyrite in iron formation.

Reference: Janes (1952, p. 44).

Nickel Lake Mining Company

Location: Lots 7 and 8, concession II, Watten township, District of Rainy River; 48.66000 degrees North, 93.13000 degrees West. Claims P577, 580, G616, 617, P578, 579.

Minerals Present: Pyrite, pyrrhotite.

Development: Shaft to 75 feet, 35 feet of crosscutting.

Years of Activity: 1902, 1918-19: Nickel Lake Mining Company.

Geology: Massive pyrite up to 12 feet wide in lean siliceous iron formation. Strikes east-west and dips steeply north.

Reference: Janes (1952, p. 45).

R403 and 212X

Location: McCaul township, District of Rainy River, Atikokan iron range, west of Sapawe Lake, mileage 134 on the C.N.R; 48.76 degrees North, 91.43 degrees West.

Minerals Present: Magnetite, pyrrhotite.

Development: 1908-1909: Test pitting.

Geology: Iron formation 2900 feet long and 1000 feet wide.

Ore Reserves: D.B. Rockwell 1908-09: 2,530,000 tons carrying 59.8%Fe, 20.40%S.

Reference: Janes (1952, p. 46).

Steep Rock Iron Mines

Location: Middle and west arms of Steeprock Lake, Freeborn township, District of Rainy River.

Minerals Present: Pyrite, quartz, hematite, goethite.

Development: Outlined by exploration and development drilling and mine operations from 1938 to present in the Errington, Roberts, Hogarth and H. zones.

Geology: Pyrite lenses occur as discontinuous bodies over a strike length of 14,000 feet; individual lenses are up to 250 feet wide and 1675 feet long. They are present at two stratigraphic intervals: (1) as irregular bodies at or near the "ashrock" goethite-hematite ore contact; (2) within the "ashrock."

Reference: R. Shklanka, Ontario Dept. Mines, personal communication.

Strawhat Lake Deposits

Location: South end of Strawhat Lake, 4 miles SW of Atikokan station; locations 857X and 858X; Schwenger township, District of Rainy River; 48.78000 degrees North; 91.61000 degrees West.

Minerals Present: Pyrite, carbonate.

Development: 1902-03: Oliver Iron Mining Co.; trenching, test pitting, 4 drill holes.

Geology: Band of pyritous ferruginous carbonates 200 feet wide and several hundred feet long. Strike N60°E, dip steeply north.

Reference: Janes (1952, p. 43).

Wallace Claims

Location: Lots 11 and 12, concession II, Watten township, District of Rainy River. FF14265, 14867; 48.71000 degrees North, 93.13000 degrees West.

Minerals Present: Pyrite, pyrrhotite, chalcopyrite.

Development: 1918: Surface trenching, test pitting. J.A. Wallace. 1966: Diamond drilling, J.A. Galbraith.

Geology: Rock and pyrite interbanded in iron formation; up to 1 foot width of pyrite in places. General strike east-west.

Reference: Janes (1952, p. 45);
Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Watten Township, Concession III, Lot 2

Location: Lot 2, concession III, Watten township, District of Rainy River; 1 mile northeast of Nickel Lake. 48.71000 degrees North, 93.13000 degrees West.

Minerals Present: Pyrite, pyrrhotite, chalcopyrite.

Development: Diamond drilling and electromagnetic survey in 1966. B. Weiss and Paramaque Mines Ltd.

Geology: Sulphide zone in mafic metavolcanics strikes east-west and dips steeply south.

Reference: Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Young Property

Location: Northeast of Glenorchy station, District of Rainy River; 48.76000 degrees North, 92.33000 degrees West.

Minerals Present: Pyrite, chalcopyrite, graphite.

Development: Geophysical survey and diamond drilling by Noranda Mines Ltd. in 1958.

Geology: Lenses of pyrite from 10 to 60 feet thick extending 2000 feet in a northwest direction cutting chlorite schist.

Reference: Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

138X and 139X

Location: 138X and 139X, Atikokan iron range, west of Sapawe Lake; District of Rainy River; 48.76 degrees North, 91.43 degrees West.

Minerals Present: Pyrite, pyrrhotite, magnetite.

Development: 1908-1909: Surface work and diamond drilling under supervision of R.H. Flaherty.

Geology: Zone of iron formation is 2600 feet long and 250 feet wide.

Ore Reserves: In 1908 and 1909 R.H. Flaherty estimated 1,827,000 tons averaging 55.73%Fe and 20.38%S on mining location 138X.

Reference: Janes (1952, p. 47).

DISTRICT OF SUDBURY

Errington and Vermilion Mines

(Formerly Consolidated Sudbury Basin Mines Ltd.)
(now Giant Yellowknife Gold Mines Ltd.)

Location: Errington mine: No. 1 shaft is on the north half of lot 9, concession VI, Creighton township; No. 2 shaft is on the north half of lot 8, concession VI, Creighton township; No. 3 shaft is on the south half of lot 4, concession I, Balfour township.

Vermilion mine: North half of lot 5, concession V, Fairbank township. This is about 4 miles southwest of the Errington mine.

Minerals Present: Pyrite 20-30%; sphalerite 10%, chalcopyrite 2-3%, pyrrhotite, galena.

Development: Errington mine: To end of 1955, over 125,000 feet of surface drilling; No. 1 shaft extends to 500-foot level; No. 2 shaft to the the 1500-foot level; No. 3 shaft is 409 feet deep. Underground work totals more than 41,000 feet on four levels.

Vermilion mine: A great deal of surface and underground drilling; shaft to 1250 feet with lateral work at 450-, 600-, 750- and 900-foot levels.

Production: In 1928-30, 142,994 tons of ore were treated from the Errington mine. From this 2,156,626 pounds of copper, 1,079,167 pounds of lead, and 9,103,424 pounds of zinc were produced.

Geology: The orebodies at the Errington mine are in a complexly folded and faulted zone within, or near, a major regional fault system. The bulk of the ore occurs on the crest and south limb of a south-dipping anticline. This structure is further complicated by south-sipping strike faults that slice the anticline and orebodies into at least four blocks. The ore is believed to be a replacement of a chert and carbonate horizon that lies between the overlying slate and underlying tuffs. The ore consists of very fine-grained pyrite,

sphalerite, chalcopyrite, pyrrhotite and galena in a carbonate matrix.

The geology at the Vermilion mine is more complex than that at the Errington mine. The strata dip about 40°S. The more steeply dipping thrust faults slice the flatter ore horizon causing repetition of orebodies in an imbricate structure.

Ore Reserves: Low pyrite ore: 4,418,500 tons grading 1.33% Cu; 1%Pb; 3.97%Zn.
High pyrite ore: 9,038,317 tons grading 1.14% Cu; 0.99%Pb; 3.82%Zn; 0.023oz.Au; 1.58 oz. Ag per ton.

Reference: From Thomson et al (1957, p. 85).

Falconbridge Nickel Mines Limited

Location: Several mines in the Sudbury mining area.

Minerals Present: Pyrite, pyrrhotite, pentlandite, chalcopyrite, cubanite, arsenides, etc.

Type of Ore: Massive and disseminated sulphides, breccia ore.

Geology: Ore deposits located at or near the contact of the Sudbury norite, and associated with quartz diorite offsets.

Production: Produces iron from pyrrhotite and pyrite.

Reference: Thomson (1960, p. 79).

International Nickel Company of Canada Ltd., The

Location: Several mines in the Sudbury mining area.

Minerals Present: Pyrite, pyrrhotite, pentlandite, chalcopyrite, cubanite, arsenides, etc.

Type of Ore: Massive and disseminated sulphides, breccia ore.

Geology: Ore deposits located at or near the contact of the Sudbury norite, and associated with quartz diorite offsets.

Production: Produces iron and sulphuric acid from pyrrhotite and pyrite.

Reference: Thomson (1960, p. 79).

Jefferson Iron Mine

Location: Woman River Iron range, District of Sudbury, claims WD 715 to 736.

Minerals Present: Pyrite, pyrrhotite, magnetite, iron carbonate, quartz.

Development: Trenches and test pits.

Geology: Pyrite zone, associated with iron formation, averages 40 feet in width. Sulphur content ranges from 25 to 40 percent.

Reference: Janes (1952, p. 49).

Norman Township

Location: Concession VI, Norman township, District of Sudbury. 2 miles NW of Wanapitei Lake.

Minerals Present: Pyrite,quartz, iron carbonate, pyrrhotite, magnetite.

Development: Pits and trenches.

Geology: Banded iron formation with pyrite; gossan zone 80 feet wide. Assays gave 34.62% and 32.51%S.

Reference: Janes (1952, p. 50).

DISTRICT OF THUNDER BAY

Candela Pyrite Occurrence

Location: Summers and Irwin townships, District of Thunder Bay. 49.66000 degrees North, 87.86000 degrees West.

Minerals Present: Pyrite.

Development: Nine drill holes totalling 10,000 feet in 1951 by Macassa Mines Ltd. 8 holes totalling about 3500 feet in 1952 by Candela Development Company.

Geology: Brecciated pyritous iron formation strikes ENE and dips 75°N. Average width 80 feet, length 12,800 feet. Averages about 15%S.

Reference: Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Coleman Deposits

Location: Gzowski township, District of Thunder Bay. Kowkash gold area, ¼ mile north of mileage 55.7 on CNR. 50.25000 degrees North, 87.53000 degrees West.

Minerals Present: Pyrite, pyrrhotite.

Development: 220-foot diamond drill hole by Polpond Mining Co. Ltd. in 1959.

Years of Activity: 1917, 1959.

Geology: A 5-foot vein of pyrite in rhyolite and a massive pyrrhotite body 5 feet wide.

Reference: Janes (1952, p. 66).
Hopkins (1917, p. 224);
Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Conmee Township, Concession V, Lot B

Location: Lot B, concession V, Conmee township, District of Thunder Bay.

Minerals Present: Pyrite.

Geology: Band of pyrite 2 to 3 feet thick in 12-foot band of quartzose iron formation.

Reference: Janes (1952, p. 49).

Davis Sulphur Ore Company

Location: Mining location R606, Township 84, District of Thunder Bay. 48.78139 degrees North, 87.22778 degrees West. 1½ miles southeast of Schreiber.

Minerals Present: Pyrite, pyrrhotite, sphalerite, galena, chalcopyrite, calcite.

Development: Shallow trench, 60-foot shaft and a adit.

Production: 1 car of pyrites.

Years of Activity: 1897-1905, 1936.

Geology: Mineralized zone 4 to 10 feet wide and 225 feet long; an assay gives 27.48%S, 41.54%Fe. Zone dips 50 to 60° east.

Reference: Janes (1952, p. 55).

Geco Mine

(Noranda Mines Limited)

Location: Gemmell township, District of Thunder Bay. 49.16250degrees North, 85.79444 degrees West. Manitouwadge.

Minerals Present: Pyrite 20%; pyrrhotite 20%; sphalerite 14%; chalcopyrite 6%.

Development: No. 1 shaft to 2450 feet opening 12 levels;
No. 3 internal shaft from 1250 feet to 2565 feet in ore zone;
No. 2 shaft to 517 feet with 2 levels at 240 and 450 feet.
No. 4 shaft to 4334 feet.

Production: Copper, zinc, silver. 1957-present.

Geology: Massive and disseminated sulphide ore body.

Reference: Thomson (1960, p. 79).

General Chemical Company

Location: N½, lot B, concesssion V, Conmee township, District of Thunder Bay. Near Mokoman on C.N.R.

Minerals Present: Pyrite, pyrrhotite, quartz.

Development: 1917: Test pitting, stripping and diamond drilling.

Geology: Pyrite with gangue exposed 75 feet in width.

Reference: Janes (1952, p. 48).

Hornick Occurrence

Location: Sturgeon Lake area; Loch Gordon; District of Thunder Bay. TB2201, 2356, 2357. 50°13'N, 90°31'W.

Minerals Present: Pyrite, pyrrhotite.

Development: Pits and trenches.

Geology: Pyritous band outcrops on west shore of Loch Gordon. One pit exposes 5 feet of pyrite and 8 feet of pyrite, quartz and rock. A sample gave 43.21%S.

Reference: Janes (1952, p. 65).

Kiddman Lake Pyrite Zone

Location: Kiddman Lake, District of Thunder Bay; 49.183 degrees North, 89.383 degrees West.

Minerals Present: Pyrite.

Geology: Pyrite replacement zone 25 feet wide and 300 feet long, strikes SW in sedimentary schists.

Reference: Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Lake Ste. Marie

Location: Kowkash gold area, Lake Ste. Marie, 2 miles SE of Redmond station; Oboshkegan township, District of Thunder Bay.

Minerals Present: Pyrite.

Development: 1917.

Geology: Iron formation in rhyolite; 3-foot pyrite band assays 31.3%S.

Reference: Janes (1952, p. 66).
Hopkins (1917, p. 226).

Max Creek

Location: Max Creek, District of Thunder Bay; 49.166 degrees North, 89.350 degrees West.

Minerals Present: Pyrite.

Geology: Pyritized shear zone two feet wide along a sediment-volcanic contact.

Reference: Jolliffe (1933, p. 15D).

McCann Claims

Location: Claims TB 2808, 2808, 3060, K115, TB 5972-75. Kowkash gold area, 3 miles north of Paska station on the CNR. 50.27000 degrees North, 87.66000 degrees West. District of Thunder Bay.

Minerals Present: Pyrite, pyrrhotite.

Development: Trenching, test pits and 2 drill holes.

Years of Activity: 1917?; Sudbury Onoman Pyrites Limited, 1952; Beirut Mining Co. Ltd. 1953-1959.

Geology: Pyrite-bearing zone in cherty quartz porphyry and altered iron formation runs about 20%S across 50 feet.

Reference: Hopkins (1917, p. 224).
Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Mike Ralph's Claim

Location: TB 3423, Lake Nipigon, 2 miles southwest of Jackpine Station on the CNR; District of Thunder Bay.

Minerals Present: Pyrite, arsenopyrite.

Development: One pit.

Geology: A rusty chlorite schist band 60 feet wide carries pyrite. A sample gave 22.9%S and 41.5%Fe.

Reference: Janes (1952, p. 49).

Mining Location R 425

Location: Mining location R425, 1¾ miles east of Schreiber; Township 84, District of Thunder Bay.

Minerals Present: Pyrite.

Development: Trenching and test pitting; short incline into the side of the hill.

Geology: Fahlband of black schist carrying pyrite lies between a hanging wall of trap and a footwall of quartzite.

Reference: Janes (1952, p. 56).

Mining Location R 638

Location: Mining Location R638, claim TB 2381; Township 84, District of Thunder Bay. 1½ miles east of Schreiber. 48.77500 degrees North, 87.21833degrees West.

Minerals Present: Pyrite, pyrrhotite.

Development: Stripping and trenching.

Geology: An east-west striking fahlband lies between trap to the north and quartzite to the south. It dips north into a hill. A grab sample gave 27.25%S.

Reference: Janes (1952, p. 56).

Morrison Claims

Location: NE corner lot B, concession V, Conmee township, District of Thunder Bay. Near Mokoman on Canadian National Railway.

Minerals Present: Pyrite.

Development: Davis Sulphur Ore Co. in 1901 put down a 5-foot test pit and 10-foot shaft.

Geology: 30-foot wide pyrite zone runs 29.20%S. Pyrite replaces conglomerate.

Reference: Janes (1952, p. 48).

Morton Lease

Location: S½, lot C, concession V, Conmee township, District of Thunder Bay.

Minerals Present: Pyrite, pyrrhotite.

Development: Stripping, 2 prospecting shafts.

Geology: A section showed 2 feet of pyrrhotite, 6 feet of pyrite and pyrrhotite, 15 feet of pyrrhotite and rock, and 12 feet of pyrite and silica.

Reference: Janes (1952, p. 48).

Mudge (Otisse) Occurrence

Location: 1½ miles north of Schreiber, north end of Cook Lake; Township 84, District of Thunder Bay. 48.83333 degrees North, 87.22778 degrees West. Mining location 776X, claims TB1048-1049.

Minerals Present: Pyrite, pyrrhotite, silica.

Development: Test pits.

Years of Activity: 1907.

Geology: An east-west mineralized zone runs for about a mile. The grade is 28 to 32%S.

Reference: Janes (1952, p. 55).

North Coldstream Mines Limited

Location: Claim K65, $\frac{1}{4}$ mile east of village of Burchell Lake, District of Thunder Bay; 49.59972 degrees North, 90.58333 degrees West.

Minerals Present: Chalcopyrite, pyrite, pyrrhotite.

Development: Main shaft to 1596 feet with levels at 200, 350, 500, 650, 800, 950, 1100, 1250 and 1400 feet. From 1942 to June 30, 1962 a total of about 189,600 feet of diamond drilling was carried out.

Production: 1903, 1906, 1916, 1917, 1957-present.

Geology: Sulphide ore bodies in chert strike east, dip north at 80 to 90° and plunge east at 50°. They are lenticular in shape.

Reference: Giblin (1964, p. 27-34).

Sulphur Lake

Location: $\frac{1}{2}$ mile north of Big Duck Lake, 14 miles north of Schreiber; District of Thunder Bay; 49.01400 degrees North, 87.31100 degrees West.

Minerals Present: Pyrite, pyrrhotite.

Geology: Pyritic iron formation forms a fahlband 2 miles in length with pyrite veins to 2 feet wide and pyrrhotite veins to 3 feet wide.

Reference: Janes (1952, p. 56).

White Fish Lake

Location: Kowkash gold area, District of Thunder Bay. 50.18000 degrees North, 87.50000 degrees West.

Minerals Present: Pyrite, magnetite, pyrrhotite, chalcopyrite.

Geology: 4 feet of massive pyrite in black slates.

Reference: Hopkins (1917, p. 223).

Willet Lake

Location: Claims KK10031, 9806-9823; Kowkash gold area; 50.33000 degrees North, 87.66000 degrees West; District of Thunder Bay.

Minerals Present: Pyrite.

Development: 2 diamond drill holes totalling 600 feet in 1955 by W.H. Bouck.

Geology: Disseminated pyrite in sugary quartz schist striking N70°W and dipping vertically.

Reference: Janes (1952, p. 67).
Hopkins (1917, p. 225).
Ontario Dept. Mines, Resident Geologist, Port Arthur, files.

Willroy Mines Limited

Location: Manitouwadge, Gemmell township, District of Thunder Bay. 49.16167 degrees North, 85.82333 degrees West.

Minerals Present: Pyrite 25%; pyrrhotite 20%; sphalerite 15%; chalcopyrite 4%.

Development: 4-compartment shaft to 2855 feet opens 16 levels. No. 2 shaft 500 feet.

Production: Copper, zinc, silver. 1957-present.

Geology: Disseminated sulphide deposit with a massive core. Host rock is iron formation.

Reference: Thomson (1960, p. 79).

DISTRICT OF TIMISKAMING

Claim HS 913

Location: Claim HS 913, Hearst township, District of Timiskaming.

Minerals Present: Pyrite.

Development: 6-foot pit.

Geology: Massive pyrite several feet wide exposed in pit.

Reference: Janes (1952, p. 73).

Combined Larder Mines Ltd.

Location: Hearst township, District of Timiskaming; claim HS 904 or 2717 on Sharp Creek, one half mile from the southwest bay of Larder Lake.

Minerals Present: Pyrite, pyrrhotite, quartz, dolomite, magnetite.

Development: 25-foot shaft with 25-foot crosscut.

Geology: Iron pyrite body in greenstone. An assay gave 43.00 percent sulphur.

Reference: Janes (1952, p. 73).

Feick Occurrence

Location: N½, lot 2, concession III, Eby township, District of Timiskaming.

Minerals Present: Pyrite, limonite, quartz.

Development: Trenches and test pits.

Geology: A fahlband in Keewatin greenstone has been traced in a northerly direction for 1000 feet. One assay gave 40.91%S.

Reference: Janes (1952, p. 73).

Whelan Occurrence

Location: Boston township, District of Timiskaming; claims L7069, MR14. 2¾ miles east of Dane station.

Minerals Present: Pyrite, pyrrhotite, quartz.

Development: Clearing, stripping and test pits.

Years of Activity: 1918.

Geology: Discontinuous bodies of pyrite and quartz associated with iron formation. Average sample assayed 41.02%S.

Reference: Janes (1952, p. 72).

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